WHAT IS CLAIMED IS:

1. A solid imaging device comprising at least one pixel, the pixel including a photoelectric conversion section and a charge detection node which are coupled to or decoupled from each other via a transfer gate transistor, the charge detection node being coupled to or decoupled from a drain of a reset gate transistor via the reset gate transistor,

wherein, after the reset gate resets a potential of the charge detection node, the transfer gate transistor is turned ON so as to allow a signal charge to be transferred from the photoelectric conversion section to the charge detection node, and thereafter a potential of the drain is changed from a HIGH state to a LOW state to a HIGH state while both of the transfer gate transistor and the reset gate transistor are maintained in an ON state.

2. A solid imaging device according to claim 1, further comprising an amplification transistor for amplifying a variation in the potential of the charge detection node and a pixel selection transistor for selectively reading an output signal from the amplification transistor,

wherein the potential of the drain is varied after an amplified signal of the signal charge is read via the amplification transistor and the pixel selection transistor, thereby presetting a potential of the photoelectric conversion section to a constant potential after the read operation.

3. A solid imaging device according to claim 2, wherein the transfer gate transistor, the reset gate transistor, the amplification transistor, and the pixel selection transistor are formed of MOS transistors of a same polarity type.

4. A solid imaging device according to claim 3, wherein the transfer gate transistor and the reset gate transistor are embedded channel-type MOS transistors.

5. A solid imaging device according to claim 4, wherein a HIGH level of a pulse voltage for driving the transfer gate transistor is lower than a HIGH level of a pulse voltage for driving the reset gate transistor.

6. A solid imaging device according to claim 1, wherein a period t1 during which the signal charge is transferred

from the photoelectric conversion section to the charge detection node and a period t2 after the potential of the drain is changed from the LOW state to the HIGH state until the transfer gate transistor is turned OFF satisfy the relationship t1 = t2.

7. A solid imaging device according to claim 1 wherein a plurality of said pixels are arranged in a matrix,

wherein the drains of the reset gate transistors in each row of the matrix are interconnected, independently from row-to-row, so as to be connected to a scanning circuit, and

wherein the scanning circuit sequentially applies pulse voltages to the drains on a row-by-row basis.

8. A solid imaging device according to claim 1, further comprising a correlated double sampling circuit for calculating a difference between a signal charge immediately after the potential of the charge detection node is reset and a signal charge immediately after the signal charge is transferred from the photoelectric conversion section to the charge detection node, and outputting the calculated difference as a net signal component representing a net signal charge.

9. A method for driving a solid imaging device comprising at least one pixel, the pixel including a photoelectric conversion section and a charge detection node which are coupled to or decoupled from each other via a transfer gate transistor, the charge detection node being coupled to or decoupled from a drain of a reset gate transistor via the reset gate transistor, wherein the method comprises the steps of:

resetting via the reset gate transistor a potential of the charge detection node;

thereafter allowing a signal charge to be transferred from the photoelectric conversion section to the charge detection node by turning the transfer gate transistor ON; and

thereafter changing a potential of the drain from a HIGH state to a LOW state to a HIGH state while maintaining both of the transfer gate transistor and the reset gate transistor in an ON state.

10. A method according to claim 9, wherein the solid imaging device further comprises an amplification transistor for amplifying a variation in the potential of the charge detection node and a pixel selection

transistor for selectively reading an output signal from the amplification transistor,

the method further comprising, after the step of allowing the signal charge to be transferred, a step of varying the potential of the drain after an amplified signal of the signal charge is read via the amplification transistor and the pixel selection transistor,

thereby presetting a potential of the photoelectric conversion section to a constant potential after the or each read operation.

11. A method according to claim 10, wherein the transfer gate transistor, the reset gate transistor, the amplification transistor, and the pixel selection transistor are formed of MOS transistors of a same polarity type.

12. A method according to claim 11, wherein the transfer gate transistor and the reset gate transistor are embedded channel-type MOS transistors.

13. A method according to claim 12, wherein a HIGH level of a pulse voltage for driving the transfer gate transistor is lower than a HIGH level of a pulse voltage

for driving the reset gate transistor.

14. A method according to claim 9, wherein a period t1 for performing a charge transfer from the photoelectric conversion section to the charge detection node and a period t2 after the potential of the drain is changed from the LOW state to the HIGH state until the transfer gate is turned OFF satisfy the relationship t1 = t2.

15. A method according to claim 9, wherein a plurality of said pixels are arranged in a matrix,

wherein the drains of the reset gate transistors in each row of the matrix are interconnected, independently from row-to-row, so as to be connected to a scanning circuit, the method further comprising the step of:

sequentially applying from the scanning circuit pulse voltages to the drains on a row-to-row basis.

16. A method according to claim 9, wherein the solid imaging device further comprises a correlated double sampling circuit for calculating a difference between a signal charge immediately after the potential of the charge detection node is reset and a signal charge immediately after the signal charge is transferred from

the photoelectric conversion section to the charge detection node, and outputting the calculated difference as a net signal component representing a net signal charge.